

**AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**LISTING OF CLAIMS:**

1. (Currently Amended) A polymer composition essentially formed by a polymer based on titanium oxide, which may be represented by the formula  $\text{TiO}_x(\text{OH})_y(\text{H}_2\text{O})_z$  in which  $x+y+z = 3$ , in the form of a gel or in the form of a sol, characterized in that wherein:

- the polymer has a structure of one-dimensional (1D) character and it ~~consists of~~ comprises fibers wound concentrically with a periodicity, deduced from the space in between the fibers, of between 3.5 Å and 4 Å;
- each fiber is made up of  $\text{TiO}_6$  octahedra;
- each  $\text{TiO}_6$  octahedron shares two opposed edges with two adjacent octahedral (2 x 2.92 Å) in order to form infinite chains that grow along the axis of a fiber; and
- two adjacent chains form double strands by the communing of edges (2 x 3.27 Å).

2. (Currently Amended) The polymer composition as claimed in claim 1, characterized in that wherein it is translucent and in that it contains the titanium of the polymer in oxidized form  $\text{Ti}^{4+}$ .

3. (Currently Amended) The polymer composition as claimed in claim 1, ~~characterized in that~~ wherein it has a violet, blue or green coloration and at least part of the titanium of the polymer is in  $Ti^{3+}$  form.

4. (Currently Amended) A method of preparing a composition as claimed in claim 2, ~~characterized in that it consists in~~ comprising:

- preparing a  $TiOCl_2$  solution in dimethylformamide (DMF) by introducing  $TiOCl_2$  dissolved in a concentrated aqueous HCl solution into the DMF, in proportions such that the concentration ( $C_{Ti}$ ) of Ti atoms is less than 2M,
- heating the solution thus obtained to a temperature between room temperature and 90°C; and
- holding the solution at this temperature for a certain time.

5. (Currently Amended) A method of preparing a composition as claimed in claim 3, ~~characterized in that it consists in~~ comprising:

- preparing a  $TiOCl_2$  solution in dimethylformamide (DMF), by introducing  $TiOCl_2$  dissolved in a concentrated aqueous HCl solution into the DMF, in proportions such that the concentration ( $C_{Ti}$ ) of Ti atoms is less than 2M;
- heating the solution thus obtained to a temperature between room temperature and 90°C;
- holding the solution at this temperature for a certain time; and
- subjecting the composition obtained to UV irradiation in an inert atmosphere.

6. (Currently Amended) A method of preparing a composition as claimed in claim 3, ~~characterized in that it consists in~~ comprising reducing  $\text{TiOCl}_2$  in concentrated hydrochloric acid, using a species that is oxidizable at a potential of less than  $-0.05$  V with respect to a standard hydrogen electrode.

7. (Currently Amended) The method as claimed in claim 6, ~~characterized in that~~ wherein the oxidizable species is chosen from metals in oxidation state zero, such as Ni, Fe, Al, Cr, Zr, Ti, Nb, Cs, Rb, Na, K, Li, La and Ce, ionic compounds, in which the cation is chosen from  $\text{V}^{2+}$ ,  $\text{Ti}^{2+}$  and  $\text{Cr}^{2+}$ , and ionic compounds in which the anion is chosen from  $\text{S}_2\text{O}_3^{2-}$ ,  $\text{H}^-$ , and  $\text{S}_2^{2-}$ .

8. (Currently Amended) The method as claimed in claim 7, ~~characterized in that~~ wherein the metal is zinc.

9. (Currently Amended) The method as claimed in claim 6, ~~characterized in that~~ wherein it furthermore includes a UV irradiation step in an inert atmosphere.

10. (Currently Amended) The method as claimed in claim 6, ~~characterized in that it consists in~~ further comprising preparing a  $\text{TiOCl}_2$  solution in dimethylformamide (DMF) starting with a  $\text{TiOCl}_2$  solution in concentrated HCl, the concentration ( $C_{\text{Ti}}$ ) of Ti atoms of the solution being less than 2M, in adding the oxidizable species, in heating the solution to a temperature between room temperature and  $90^\circ\text{C}$  and in holding the solution at this temperature.

11. (Currently Amended) The method as claimed in claim 6, ~~characterized in that it consists in~~ further comprising introducing the oxidizable species into a  $\text{TiOCl}_2$  solution in concentrated hydrochloric acid, in which  $C_{\text{Ti}}$  is less than 2M, and in maintaining the reaction mixture at a temperature between room temperature and 90°C.

12. (Currently Amended) The method as claimed in ~~either of claims 4 and 6~~ claim 4, ~~characterized in that~~ wherein  $C_{\text{Ti}}$  is less than 1M in order to obtain a composition in sol form.

13. (Currently Amended) The method as claimed in ~~either of claims 4 and 6~~ claim 4, ~~characterized in that~~ wherein  $C_{\text{Ti}}$  is greater than 1M in order to obtain a composition in gel form.

14. (Currently Amended) A photovoltaic cell comprising a photoanode and a photocathode in an electrolyte, ~~characterized in that~~ wherein the photoanode comprises a conductive glass plate coated with a layer of a composition as claimed in claim 1 in gel form, containing the titanium of the polymer in  $\text{Ti}^{3+}$  form and the photocathode is a conductive glass plate coated with a layer of composition as claimed in claim 1 in gel form containing the titanium in  $\text{Ti}^{4+}$  form.

15. (Currently Amended) Solar protection glazing, ~~characterized in that~~ wherein it comprises a glass plate covered with a layer of composition according to the invention in the form of a gel.